

## **ABSTRACT OF THE DISCLOSURE**

Methods, compositions and instruments for predicting antimicrobial or preservative activity of an antimicrobial or preservative agent are disclosed. Under the present invention, a composition containing a probe molecule with a chromophore is

5 placed in an instrument comprising a source of light radiation and a detector. The antimicrobial or preservative agent is reacted with the probe molecule to change the probe molecule's interaction with the light radiation. During this interaction, the probe molecule acts as a surrogate for a microbial cell membrane and the antimicrobial or preservative agent acts at least to some degree against the probe molecule as it would

10 against the microbial cell.